CONSERVATIVE METHODS IN THE TREATMENT OF TUMORS OF THE BLADDER*

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ANY evaluation of a method of treatment of a disease must be based on an honest appraisal of the seriousness of the disease to be treated, the results to be obtained by the treatment, and the morbidity and mortality risks involved in undertaking the procedure.

Comparison of end results of two or more types of treatment will then give one a good insight on how that disease may best be treated with the least possible risk to the patient. At times, taking great risks is mandatory if good results are to be obtained but in all patients there comes a point where the risks may be too great to warrant the procedure on the basis of the results to be expected. Complete correlation of the above mentioned points, along with some others to be mentioned, is essential if one is to accomplish all that is possible in the treatment of tumors of the bladder.

I would like to divide my discussion of pathology into two main points: the clinical and the histological.

Under the topic of clinical pathology, one must try to evaluate the tumor not only as to age but also as to size and character together with the degree of infiltration or extravesical spread.

The history may frequently be misleading. Some patients who have had symptoms for years may present a simple papilloma while others who come to you immediately following their first hemorrhage, may have far-advanced cancer.

Physical examination is extremely important and many times may give one a clue as to the character of the tumor. Careful bimanual examination, under anesthesia if necessary, will sometimes give a clue as to the depth of the involvement of the bladder wall or the presence

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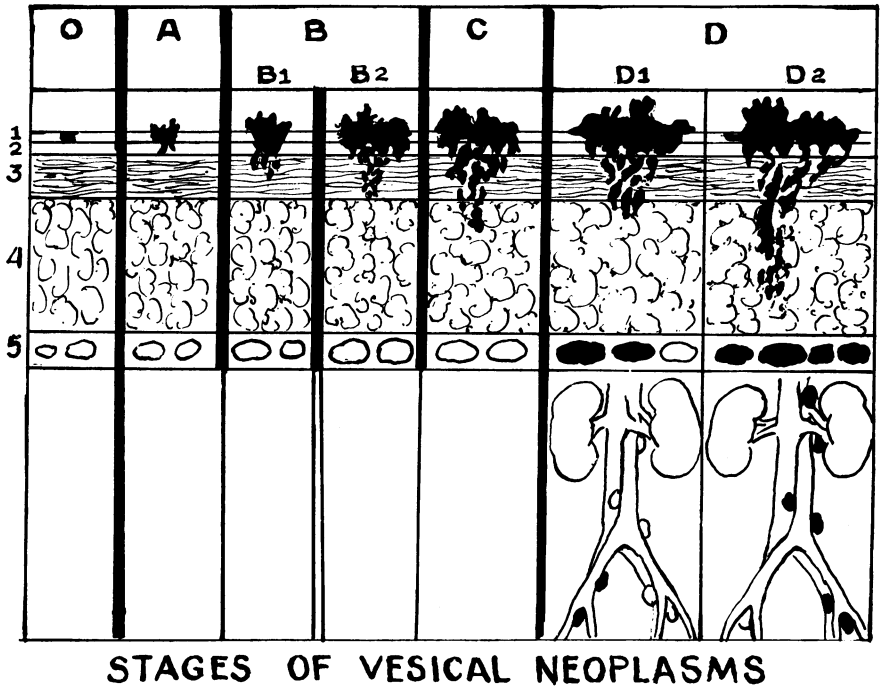

Fig. 1. Classification of Bladder Tumors in Terms of Spread
By Victor F. Marshall, M.D.
Adapted From: Jewett's Classification

of metastases or perivesical extension. The cystoscopic picture is, of course, invaluable and cannot be supplanted by any other type of examination. The actual character of the tumor is important. Is it a sessile, meaty type of tumor or is it papillary in character? The sessile tumors usually have the broader bases and tend to infiltrate more quickly. Also, I am inclined to believe they metastasize much sooner due to their rapid invasion of lymphatics and blood vessels.

Bullous edema about the base of any tumor usually means infiltration of the tumor into the deep submucosal and muscle layers of the bladder. Last but not least, an adequate biopsy[1] taken deeply at the base of the tumor will give an accurate histologic picture of the malignancy of the tumor and whether or not it extends into the muscle layer of the bladder. Correlation between depth of extension and cell type will be of definite prognostic value in a high percentage of cases.

Classification of bladder cancer as to the possibility of cure is of great importance. I believe that Jewett's[2] classification, slightly modified by Marshall,[3] gives us a very satisfactory base line for comparing end results obtained by different methods in different clinics. Anyone who attempts to compare results of one method with another without adhering to the same classification is not going to add much to our knowledge. I have only one fault to find with both of these classifications and this is based on my own observation. I have noticed that the flat, sessile, epidermoid type of cancer is far less amenable to treatment and is far more apt to have extended into the perivesical space or to have metastasized when first seen than papillary types of the same grade of cell malignancy. Hence, I would like to see that simple division in the classification of bladder cancer preserved and used in reporting statistics.

Five methods of conservative surgery are employed and I will list them according to the frequency with which they are used.

1. Transurethral Resection alone is used in practically all papillomas of the bladder and in all papillary carcinomas of stage A or B_1. It is also used in a limited number of stage B_2 where six to eight weeks' cystoscopic follow-up reveals them to have healed without evidence of local recurrence. It is also used in some patients who are such poor risks that minimal surgery is literally mandatory. Transurethral resection alone has been employed in epidermoid type cancers, having a base of not more than 1½ cm. and still in stage A or B.

2. Transurethral Resection with Radon Seed Implantation is used in tumors of stage B_2 and a limited number of stage C where more radical surgery is contraindicated or is refused by the patient. It is also employed in those cases in which an error in judgment has placed them in stage B_1 when actually they were B_2. This is the type of case which shows local recurrence in the resected area when checked cystoscopically six to eight weeks after operation. This method has also been used in cases in class D where the presence of metastases was known but it was hoped to re-establish a normal bladder for the patient's comfort. This has been accomplished at least twice to my knowledge. These two patients both died of metastases; one four years and the other three years after operation but both had cystoscopically negative bladders at the time of their death.

3. Transurethral Resection followed by a Radon Catheter delivering 3620 millecurie hours of radiation seems to be of benefit in slow-

ing down or preventing multiple recurrence in cases of papillomatosis or multiple papillary cancers of very low grade malignancy.

4. Segmental Resection of the Bladder is indicated in those lesions of type B_2 or C where they are located in a resectable spot, allowing for a wide margin around the tumor. In four or five cases, in which transurethral resection of the tumor was followed by segmental resection, we have been surprised to find that serial sections of the resected specimen have failed to reveal any cancer cells. Again, an error in judgment was made but at least a safe error.

5. Suprapubic Cystotomy with Loop Resection of the Tumor with or without radium implantation is rarely done. If the tumor is of a type which can be adequately controlled by resection, we feel that there is no non-resectable area in the bladder if a good assistant is available to push down the anterior wall when the tumor is in this area.

Just a word about technique: In transurethral resection of bladder cancer, it is important to make a histologic dissection. The muscle fibers of the bladder are very recognizable as such and great care should be exercised in both type O and A tumors to at least expose these fibers. In type B_1 and B_2 areas of tumor infiltration into muscle are visualized as a white, granular-appearing tissue lying between and infiltrating into muscle fibers. As long as this type of tissue can be seen in the base of the cut, one may be sure he has not resected deeply enough.

A wide margin, at least 1 cm., of normal bladder mucosa and submucosa should be resected to be sure no cells have been left behind.

If there is any doubt as to whether the base is clean or not at the end of the resection then radon seeds should either be implanted immediately or at the end of the six weeks' check-up period if any small tumor recurrence is visible at that time. All resected areas along with the margins are fulgurated lightly as a final procedure in the operation.

About the only complication encountered in resection of bladder tumors is the nerve stimulation resulting from resecting a tumor on the lateral wall. This may force the bladder into the loop, causing a full thickness laceration. It is easily prevented by resecting those tumors with the bladder as nearly empty as possible and reducing the current slightly.

Radon seed implantation can be satisfactorily and accurately done cystoscopically. Here again, one should map the area carefully and implant the seeds at 1 cm. intervals, covering the entire base and at least

CHART I—EIGHTY CASES PAPILLOMA OF BLADDER TREATED BY TRANSURETHRAL RESECTION

	Alive		*Dead*		*Not Followed*	
Year	*Without tumor*	*With tumor*	*Without tumor*	*With tumor*	*Without tumor*	*With tumor*
1			6	5	20	
2			3		6	
3			1		3	
4			2		2	
5	9		3		2	...
6	5					
7	5		2		2	
8						
9	3					
10	1					
11						
12						
	23		17	5	35	

½ cm. of what appears to be normal bladder mucosa. This covers 1½ cm. of bladder beyond the base, if we have resected 1 cm. of the periphery as described. Care should be taken not to be over enthusiastic in the use of radon. Over radiation accomplishes no more and is responsible for a painful bladder for weeks whereas accurate and adequate radiation is not usually attended with much discomfort.

In segmental resection, I would advise as wide a margin as possible, around the tumor, preferably an inch. We use this for the sessile, infiltrating types usually, and we all know of their tendency to extend into the lymphatic and vascular channels of the bladder wall itself, well away from the original growth.

The morbidity of transurethral operations is extremely low. The patients are hospitalized from forty-eight hours to about six days, with the average being four days. An indwelling catheter is usually left in place from two to three days in the larger and deeper tumors.

The mortality rate is equally low. In a recent review of 458 patients treated by this method, the operative mortality was three cases or 0.65 per cent. This included one patient who had a small papilloma resected and died of a coronary thrombosis eight hours later. Her operation was entirely uneventful and uncomplicated but she must be considered an operative death.

CHART II—ONE HUNDRED SEVENTY-SIX CASES INFILTRATING CANCER TREATED BY TRANSURETHRAL RESECTION ALONE

	Alive		*Dead*		*Not Followed*	
Year	*Without tumor*	*With tumor*	*Without tumor*	*With tumor*	*Without tumor*	*With tumor*
1			5	71	23	2
2			6	12	5	
3			2	14	1	
4			1	5	2	
5	5		2			
6	2					
7	7		2			
8	2		1			
9	2					
10	1	1	1			
11						
12			1			
	19	1	21	102	31	2

What can be expected in the way of end results with this type of treatment?

This report deals with a series of 368 tumors of the bladder in which four different methods of treatment were employed. Eighty of these were papillomas or type O, according to the Marshall classification and will be treated superficially (Chart I).

Five or 6.2 per cent have died with their disease still present.

Forty-five cases or 56.2 per cent have had complete follow-up.

Thirty-five have not returned for complete follow-up examination.

Twenty-eight or 62.2 per cent of those followed have survived five years or more.

Twelve died during the first four years of other causes.

Of those accurately followed 88.9 per cent have been apparently cured.

In the 288 cancers of the bladder seen, five patients were literally moribund and not operated. That leaves 283 patients as a basis for this report.

One hundred seventy-six patients were treated by transurethral resection of the tumor (Chart II). Multiple resections were done in some cases which showed either recurrences or new growths.

CHART III—SEVENTY-ONE CASES INFILTRATING CANCER TREATED BY TRANSURETHRAL RESECTION AND RADON IMPLANTATION

	Alive		*Dead*		*Not Followed*	
Year	*Without tumor*	*With tumor*	*Without tumor*	*With tumor*	*Without tumor*	*With tumor*
1			1	36	3	
2			1	2		1
3				3		
4			3	4		
5	1		2	5		
6	1					
7			1	1	1	
8			1			
9	1					
10						
11						
12						
13	2					
14	1					
	6		9	51	4	1

One hundred forty-three or 81.3 per cent of the cases have had an accurate follow-up.

Thirty-three or 18.7 per cent have not returned for follow-up but no death certificate has been filed in the New York State Department of Vital Statistics, so they are for the most part considered to be alive.

Twenty-seven or 15.3 per cent have survived five years or longer.

Of those accurately followed 18.8 per cent have survived five years or longer.

By a more or less superficial analysis, it was estimated that sixty-six of these tumors were probably stage B_2 or greater. They were all Grade III to IV, sessile, infiltrating, epidermoid type cancers.

It is sincerely believed by the author that study of the individual pathologic section with a critical analysis of the physical examination and cystoscopic picture as elicited from the individual records will probably place a much higher percentage of cases in the above category.

If we use the above figure, this leaves 110 patients who might be helped by this type of surgery. Of this group, 27 or 24.5 per cent survived five years or longer.

Seventy-one patients were treated by transurethral resection and radon seed implantation (Chart III).

Of these 92.5 per cent have been accurately followed; and

7.5 per cent have been lost but no death certificates have been filed with the New York State Department of Vital Statistics, so they are probably alive.

Seventeen patients or 25.7 per cent have survived five years or longer.

Of those accurately followed, 26.2 per cent have survived five years or longer.

Forty-one of these patients had large, sessile, epidermoid type tumors of grade III to IV malignancy which would probably fall into the category of B_2 or C stage growths.

If we do not consider these as potentially curable, there are thirty patients with a five year survival rate of 56.6 per cent.

Twenty-five patients were treated by suprapubic cystotomy and fulguration with or without radium implantation. These were all old cases most of which were treated prior to 1940.

There was one operative death.

Two cases had deep x-ray therapy in addition to the cystotomy and five cases had implantation of radium or radon. All patients died of their disease and only seven survived more than one year. The average survival time was 11.3 months.

Eleven patients of this series have had segmental resection. Ten of them have been accurately followed.

All but one patient had flat, sessile, infiltrating epidermoid carcinoma of Grades III or IV.

Only two of the ten followed were completely free from recurrence. One has survived eight years and is in excellent health. The other lived one year and succumbed to heart disease.

Three patients survived five years or longer. One of them lived seven years but has been treated endoscopically by resection and radon for five recurrences.

The average survival time has been 2.7 years.

Summary

A careful study of this report makes one thing very apparent; namely, the great need for careful analysis of cases preoperatively and at time of biopsy so as to be able to visualize more clearly the percentage

possibility of cure by conservative methods. Many patients in this series could not have withstood radical surgery so at best the only thing to be expected was palliation.

It would seem that accurate and thorough transurethral resection followed by radon seed implantation in the infiltrating types of tumors may have something to offer where the tumor has not already extended locally.

The low morbidity and mortality rate plus the preserving of the urinary bladder makes endovesical surgery for bladder cancer more enticing.

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